

REMARKS

Claims 1-6, 8-10, 12, 13, 16-18, 64, and 65 are pending, with claim 1 being independent.

Priority

The Office denies the applicant's claim of priority to U.S. Patent No. 6,136,541 ("541 patent"), PCT/US00/04076 application ("076 application") and U.S. Patent No. 6,671,625 ("625 patent") because certain features recited in the claims of the above-referenced application are allegedly not supported by these documents. Applicants respectfully request reconsideration. For the reasons that follow, the features of claim 1 cited by the Office are fully supported by at least the '541 patent.

Specifically, the Office Action states that the feature "converting an input signal from the spatial domain to the spectral domain for active interferometric analysis" is not found in the '541 patent. *See Office Action*, page 2, last paragraph. Applicants respectfully disagree.

Claim 1 recites, in part, "performing active interferometric analysis on the received input signal using an expresser function in a spectral domain to detect the presence of an event of interest within the arrayed signal pattern via a computationally induced interference mechanism, wherein the input signal is converted from the spatial domain to the spectral domain for the active interferometric analysis, wherein the event of interest is processed in a different way than other events within the arrayed signal pattern; obtaining the event of interest from the input signal; and providing the obtained event of interest as output." (Emphasis added).

The '541 patent describes techniques for identifying mutations, if any, present in a biological sample. *See '541 patent*, Abstract. Figure 4 of the '541 patent "is a flow chart illustrating an exemplary method for generating Quantum Expressor Functions." *Id.*, col. 6, lines 24-26. In step 404 of figure 4, Harmonic Amplitudes are calculated from a Hamiltonian, which is calculated based on Spin Boson System, described in step 402. *Id.*, figure 4. In step 406, an Order Function is generated. *Id.* In this regard, the '541

patent states "The power amplitudes η_m in the m th frequency component of asymptotic state space are calculated at step 404 using ..., and the phase shift is given by ..." *Id.*, col. 11, lines 56-67.

It is well known that step 404 of the '541 patent includes conversion of noise data, i.e., detected amplitudes over spatial elements or over time or both. This spatial data is Fourier transformed into spectral data (spatial frequencies or temporal frequencies). Specific harmonics of the spectrally transformed data is then used to calculate the harmonic amplitudes for construction of the expressor function. This expressor function is in and is used in the spectral domain as well. *See, e.g., id.*, col. 10, lines 14-25. The '541 patent further describes methods by which the spectral construction is constrained. *See id.*, col. 10, lines 48-60. Additional details describing methods by which some of the spectral transforms are implemented to derive the Expressor function are described in the '541 patent. *See id.*, col. 11, line 30 – col. 13, line 26. Thus, the '541 patent provides sufficient support to enable the feature, "an expressor function is in a spectral domain," as recited in claim 1.

Further, figure 2 of the '541 patent states, in step 208, "Image Preconditioning." *Id.*, figure 2. Prior to transforming the input signal for interferometric computation (figure 2, step 210) with an appropriately constructed Expressor Function (figure 2, step 202), image preconditioning transforms the input signal. The Expressor Function is in the spectral domain, as discussed above with reference to figure 4, step 404. Further, the '541 patent describes that the input data needs to be normalized in the phase space to be convolved with the Expressor Function. *Id.*, col. 17, line 42 – col. 18, line 19. To do so, spatial frequencies are generated along the same lines as for the Expressor Function construction. *See id.*, col. 10, lines 14-25, lines 48-60. Additionally, instantaneous phase properties are determined. The '541 patent also describes phase embedding operator construction in the spectral domain. *See id.*, col. 14, line 1 – col. 17, line 28. Because the input signal is in the spatial domain, and because the convolving operation transforms, i.e., converts, the input signal into the domain of the Expressor Function (spectral), the '541 patent provides sufficient support to enable the

feature, "the input signal is converted from the spatial domain to the spectral domain," as recited in claim 1.

Thus, the features cited by the Office are fully supported by the '541 patent, to which the present application claims priority. Accordingly, applicants respectfully submit that the present application properly claims priority to the '541 patent.

35 U.S.C. § 103

Claims 1-6, 8-10, 12, 13, 16-18 and 65-65 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over the '541 patent in view of Calib (U.S. Patent No. 6,088,099).

For the aforementioned reasons, the present application properly claims priority to the '541 patent. Therefore, the '541 patent cannot be used as prior art to reject claims of the present application. Calib does not describe or suggest all the features recited in claim 1. Accordingly, the rejection of claim 1 and its dependents should be withdrawn.

Applicants respectfully submit that the application is in condition for allowance.

CONCLUSION

By responding in the foregoing remarks only to particular positions taken by the examiner, the applicant does not acquiesce with other positions that have not been explicitly addressed. In addition, the applicant's selecting some particular arguments for the patentability of a claim should not be understood as implying that no other reasons for the patentability of that claim exist. Finally, the applicant's decision to amend or cancel any claim should not be understood as implying that the applicant agrees with any positions taken by the examiner with respect to that claim or other claims.

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No fees are believed to be due. Please apply charges or credits, if any, to
deposit account 06-1050.

Respectfully submitted,

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